MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
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SRM Number: 3082
MSDS Number: 3082
SRM Name: Aroclor 1232 in Methanol
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Aroclor 1232 in Methanol

Description: SRM 3082 consists of five 2-mL ampoules, each containing approximately 1.2-mL of a solution of aroclor 1232 in methanol.

Other Designations: **Aroclor 1232** (PCB 1232; polychlornated biphenyl (aroclor 1232); chlorodiphenyl (32 % Cl)) in **Methanol** (methyl alcohol; wood alcohol; methyl hydroxide; carbinol; monohydroxymethane; wood spirit; wood naphtha; methylol; *Colonial Spirit**; *Columbian Spirit**; *Pyroxylic Spirit**)

Name	Chemical Formula	CAS Registry Number
Methanol	CH_3OH	67-56-1
Aroclor 1232	complex molecule	11141-16-5

DOT Classification: Methanol, UN1230 (Small Quantity Exemption)

Manufacturer/Supplier: Available from a number of suppliers

* Trade name

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Methanol	99	ACGIH TLV-TWA (skin): 200 mg/kg or 262 mg/m^3
		OSHA TLV-TWA (skin): 200 mg/kg or 262 mg/m^3
		Human, Inhalation: TC_{LO}: 86000 mg/m^3
		Human, Inhalation: TC_{LO}: 300 mg/kg
		Human, Oral: LD_{LO}: 143 mg/kg
		Man, Oral: TD_{LO}: 3429 mg/kg
		Rat, Oral: LD_{50}: 5628 mg/kg
Aroclor 1232	1	NIOSH TWA: 1 μg/m^3 (10 hours)
		Rat, Oral: LD_{50}: 4470 mg/kg
		Rabbit, Skin: LD_{LO}: 2 g/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Methanol	Aroclor 1232
Appearance and Odor: a clear, colorless liquid with a characteristic alcoholic odor	**Appearance and Odor:** a colorless liquid; odor not available
Relative Molecular Mass: 32.04	**Relative Molecular Mass:** complex molecule
Density: 0.7914 g/mL	**Density (water = 1):** 1.24
Boiling Point: 65 °C	**Boiling Point:** 290 °C – 325 °C
Freezing Point: -94 °C	**Freezing Point:** not available
Vapor Pressure (@ 20 °C): 97.25 mm Hg	**Vapor Pressure (@ 20 °C):** 0.004 mm Hg
Evaporation Rate (butyl acetate = 1): 4.6	**Evaporation Rate (butyl acetate = 1):** not available
Viscosity (@ 20 °C): 0.59 cP	**Viscosity (@ 20 °C):** 44 – 51 SUS
Water Solubility: soluble	**Water Solubility:** very slightly soluble
Solvent Solubility: soluble in ether, benzene, alcohol, acetone, chloroform, ethanol, ketones, and most other organic solvents	**Solvent Solubility:** soluble in oils and organic solvents

NOTE: The physical and chemical data provided are for the pure components. Physical and chemical data for this methanol/aroclor 1232 solution **DO NOT** exist. The actual behavior of the solution may differ from the individual components.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Methanol
Flash Point: 11 °C **Method Used:** Closed Cup **Autoignition Temperature:** 385 °C

Flammability Limits in Air (Volume %): **UPPER:** 36
LOWER: 6.0

Aroclor 1232
Flash Point: 238 °C **Method Used:** Not Available **Autoignition Temperature:** Not Available

Flammability Limits in Air (Volume %): **UPPER:** Not Available
LOWER: Not Available

Unusual Fire and Explosion Hazards: Methanol is a severe fire and explosion hazard when exposed to heat or flame. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor and air mixtures are explosive.

Aroclor 1232 is a slight fire hazard.

Extinguishing Media: Use alcohol-resistant foam, dry chemical, carbon dioxide, or water spray.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) with a full face piece in the pressure demand or positive mode and other protective clothing.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: Avoid contact with heat, sparks, flames, or other sources of ignition. Avoid inhalation of vapors or combustion by-products. Avoid contact with the skin. **DO NOT** allow the material to contaminate water sources.

Incompatibility (Materials to Avoid): Methanol is incompatible with halo carbons, combustible materials, metals, oxidizing materials, halogens, metal carbide, bases, and acids.

Aroclor 1232 is incompatible with acid halides, chlorine, oxides of carbon, and halogenated compounds.

See Section IV: *Unusual Fire and Explosion Hazards*

Hazardous Decomposition or By-products: Thermal decomposition products of methanol may include toxic oxides of carbon. Thermal decomposition products of aroclor 1232 may include acid halides, chlorine, oxides of carbon, and halogenated compounds.

Hazardous Polymerization _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Methanol: Methanol is a fatal poison. This material is harmful if inhaled or absorbed through skin. Ingestion may be fatal or cause blindness. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause damage to the eyes, liver, heart, and kidneys. Methanol may also cause gastrointestinal disturbances, convulsions, and/or nerve damage.

PCB 1232 (Aroclor): PCBs show high levels of bio-accumulation in the fatty tissues with very slow metabolism, especially for pentachloride $(Cl)_5$ compounds and above. The skin lesions consist of small pimples and, in the initial stages, dark pigmentation of the exposed pores. In the later stages, blackheads and pustules develop. The PCBs are potent liver toxins that can be absorbed through the skin in hazardous amounts without immediately discernible pain or discomfort. This liver toxicity of chlorinated biphenyls appears to be increased if there is exposure to carbon tetrachloride at the same time. Where liver damage is extensive, the patient may become comatose and die. The higher the chlorine content of the diphenyl compound, the more probable it is toxic.

Medical Conditions Generally Aggravated by Exposure: Methanol may affect eye disorders, kidney disorders, skin disorders, and allergies. Aroclor 1232 may affect liver disorders, skin disorders, and allergies.

Listed as a Carcinogen/Potential Carcinogen (Methanol):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

Listed as a Carcinogen/Potential Carcinogen (Aroclor 1232):

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X	
In the International Agency for Research on Cancer (IARC) Monographs	X	
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: **Methanol:** central nervous system
Aroclor 1232: liver

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Absorb small spills with sand or other absorbent material and place into containers for disposal. **DO NOT** flush into a sewer. Keep out of watersheds and waterways.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Persons handling this material must wear protective eyewear, clothing, and gloves to prevent contact with this material.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Protect containers from physical damage. Sealed ampoules, as received, should be stored in the dark at temperatures lower than 30 °C. Keep material in a well-ventilated area away from incompatible materials.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources:
MDL Information Systems, Inc., MSDS *Methyl Alcohol*, 19 June 2001.
MDL Information Systems, Inc., MSDS *Aroclor 1232*, 22 March 2001.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.